

REMARKS

Claims 1-19 are pending in the application. The Examiner rejected Claims 5-8 under 35 U.S.C. 112, second paragraph, as being indefinite. The Examiner has rejected Claims 1, 5 and 16 under 35 U.S.C. §103(a) as being unpatentable over Chalmers (U.S. Patent 5,375,146) in view of Lovinggood et al. (U.S. Patent 6,697,603), and further in view of Poklemba (U.S. patent 5,696796). The Examiner has rejected Claims 2-4, 6-15, 17 and 18 under 35 U.S.C. §103(a) as being unpatentable over Chalmers in view of Lovinggood et al., further in view of Poklemba, and further in view of Ostman (U.S. Patent 6,061,385).

On July 26, 2006 Applicant's representative contacted the Examiner to discuss the "Final" marking of the present Office Action. Since the claim amendments only contained features that were contained in dependent claims, they did not necessitate the new grounds for rejection. The Examiner stated that although the claim amendments contained in the amended claims did contain certain features of the dependent claims, the amendments were not verbatim and thus she felt that her position that the amendments necessitated the new grounds of rejection was proper. The Examiner stated that she would prefer to address any issues of a premature "Final" marking in a formal Response. M.P.E.P. 706.07(a) states, "A second or any subsequent action on the merits in any application or patent involved in reexamination proceedings should not be made final if it includes a rejection, on prior art not of record, of any claim amended to include limitations which should reasonably have been expected to be claimed." Based on the foregoing, it is respectfully submitted that the final marking of the Office Action be withdrawn.

In addition the Examiner has not properly rejected all of the elements recited in Claim 16. It appears that the rejection of Claim 16 merely copies the rejections from other claims and includes them in the rejection of Claim 16. As claim 16 recites additional and different elements from Claim 1 and 5, Claim 16 requires separate rejections. Therefore, the final marking of the Office Action must also be withdrawn for this reason, and a proper rejection be provided.

Regarding the rejection of Claim 5 under §112, second paragraph, the Examiner states

that the claim is “unclear and confusing.” Claim 5 recites, “a filter for attenuating an aliasing frequency component and an image frequency component of the first mixer in the digital down-converter, from an output of the radio receiver”. Thus the filter attenuates a signal output from the radio receiver. The aliasing frequency component and the image frequency component are attenuated from the signal. The attenuation of the aliasing frequency component and the image frequency component is based on the first mixer characteristics. This is clearly set forth in the Specification at page 9, lines 10-21, and at page 10, lines 15-22. Claim 5 is clear and concise.

In addition, in claim 5 of the present invention, the filter is the BPF 305. Referring to the explanation of the BPF 305 in the detailed description of the present application, “the BPF 305 is an analog filter arranged in front of an A/D converter 306, which can suppress an interference signal of an image frequency inputted to a DDC” and “an analog filter 305 only needs to suppress the interference signal of an aliasing frequency and the image frequency”. Hence, Claim 5 is clear and concise.

Based on at least the foregoing, withdrawal of the rejection of Claim 5 under §112 is respectfully requested.

Regarding the rejections of independent Claims 1, 5 and 16, under §103(a), the Examiner states that Chalmers in view of Lovinggood et al. and further in view of Poklemba renders the claims obvious. Chalmers discloses a digital frequency conversion and tuning scheme for microwave radio receivers and transmitters; Lovinggood et al. discloses a digital repeater; and, Poklemba discloses a continuously variable IF sampling method for digital data transmission. We disagree with the rejections on several grounds.

First, Claim 1 recites a decimation filter for suppressing unwanted components among the frequency of the first IF signal from the first mixer. The Examiner states that this feature is inherent in and disclosed by Chalmers, and cites col. 1, lines 49-51. The cited section of Chalmers states, “Variations employing different numbers of conversion stages also are known. In any event, each such conversion stage requires a mixer, an LO, and a filter to remove the

undesired mixer products.” Since a decimation filter is finite impulse response filter with specific characteristics, an inherency argument is not only misplaced but also improper. Chalmers does not teach or disclose a decimation filter.

Second Claim 1 recites a second mixer for converting the frequency of the first IF signal having only wanted components outputted by the decimation filter to a second IF signal of the detection frequency which the Examiner equates with mixer 112 of Chalmers. The second mixer of Claim 1 receives the signal output from the decimation filter. Chalmers in FIG. 1 illustrates its mixer 112 receiving a signal from amplifier 110.

Claim 1 further recites that the second mixer outputting the second IF signal as a complex signal by multiplying the output of the decimation filter by a complex local signal. The Examiner now equates the second mixer of Claim 1 with mixer 132 illustrated in FIG. 1 of Chalmers. The Examiner has thus far equated the second mixer of Claim 1 with both mixer 112 and mixer 132 of FIG. 1 of Chalmers. Further, this feature of Claim 1 states that the second mixer multiplies the output of the decimation filter by a complex local signal. Neither mixer 112 nor mixer 132 of Chalmers multiplies the output of the decimation filter by a complex local signal.

Claim 1 also recites that the second mixer comprises a first selector for cyclically selecting a multiplication value among cosine wave values of the local signal, and a second selector for cyclically selecting a multiplication value among sine wave values of the local signal. The Examiner opines that Poklemba discloses these features, and specifically points to the normal/inverting gating circuits (106 and 108) and multiplexer (110) of FIG. 4. The normal/inverting gating circuits 106 and 108 are not selectors as defined in the specification.

Additionally, a decimation filter and a second mixer in the present application are distinguishable from a filter to remove products of an undesired mixer products and a mixer 112 of Chalmers, respectively.

The Examiner alleged that a first selector and a second selector of a second mixer in the

present application are equivalent to a NORM/INVERT (106, 108) of Paklemb. However, Paklemb merely recites that the NORM/INVERT (106, 108) outputs (+1, 0, -1, 0) of a cosine sample and (0, +1, 0, -1) of a sine sample, and multiplies an I channel and a Q channel using the above sample values. Accordingly, from Chalmers and Paklemb, it cannot be known how the filter of Chalmers is combined with the NORM/INVERT (106, 108) of Paklemb, and also in spite of combining the filter of Chalmers and the NORM/INVERT (106, 108) of Paklemb, the combined structure differs from the structure in Claim 1 since the filter of Chalmers is not a decimation filter of claim 1.

Based on at least the foregoing, withdrawal of the rejection of Claim 1 is respectfully requested.

Regarding Claim 5, the arguments set forth above with respect to Claim 1 also apply to Claim 5. In addition, Claim 5 recites a filter for attenuating an aliasing frequency component and an image frequency component of the first mixer in the digital down-converter. This filter is matched to the first mixer. This filter is not taught or disclosed by Chalmers.

Based on at least the foregoing, withdrawal of the rejection of Claim 5 is respectfully requested.

Regarding Claim 16, the arguments set forth above with respect to Claim 1 also apply to Claim 16. In addition, Claim 16 recites a first mixer for converting and outputting a frequency of the received signal to a frequency of a first IF signal by multiplying the digital signal by a real signal. The mixer 106 of Chalmers cited by the Examiner does not multiply the digital signal by a real signal.

Second Claim 16 recites a second mixer for dividing the frequency of the first IF signal into a cosine part and a sine part and processing the cosine part and the sine part with a polyphase structure for converting and decoding to the frequency of a second IF signal by multiplying the first IF signal by a complex local signal. The Examiner cites mixer 112 of Chalmers as disclosing these features. The mixer 112 of Chalmers does not divide any frequency into a cosine part and a

sine part, nor does mixer 112 multiply the first IF signal by a complex local signal.

Additionally, Paklemb merely recites that the NORM/INVERT (106, 108) outputs (+1, 0, -1, 0) of the cosine sample and (0, +1, 0, -1) of the sine sample, but does not teach two decimation filters for suppressing an unwanted signal of respectively input signals and a selector for selecting and inverting signals, as disclosed in claim 16 of the present application.

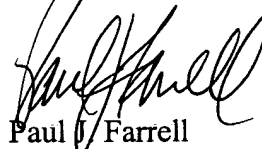
Finally, the Examiner rejects a first and a second selector allegedly recited in Claim 16. It is apparent that the Examiner merely copied the previous rejections. Claim 16 recites that the second mixer includes a selector for selecting and inverting signals from two decimation filters for suppressing an unwanted signal of respectively inputted signals. This feature has not been properly rejected by the Examiner.

Based on at least the foregoing, withdrawal of the rejection of Claim 16 is respectfully requested.

Independent Claims 1, 5 and 16 are believed to be in condition for allowance. Without conceding the patentability per se of dependent Claims 2-4, 6-15, 17 and 18, these are likewise believed to be allowable by virtue of their dependence on their respective amended independent claims. Accordingly, reconsideration and withdrawal of the rejections of dependent Claims 2-4, 6-15, 17 and 18 is respectfully requested.

Accordingly, all of the claims pending in the Application, namely, Claims 1-18, are believed to be in condition for allowance. Should the Examiner believe that a telephone conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicant's attorney at the number given below.

Respectfully submitted,



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